When the accident happened to the princess, the good fairy who had saved her life by condemning her to sleep a hundred years was in the kingdom of Mataquin, twelve thousand leagues away. She was instantly warned of it, however, by a little dwarf who had a pair of seven-league boots, which are boots that enable one to cover seven leagues at a single step. The fairy set off at once, and within an hour her chariot of fire, drawn by dragons, was seen approaching.

The king handed her down from her chariot, and she approved of all that he had done. But being gifted with great powers of foresight, she bethought herself that when the princess came to be awakened, she would be much distressed to find herself all alone in the old castle. And this is what she did.

She touched with her wand everybody (except the king and queen) who was in the castle -- governesses, maids of honor, ladies-in-waiting, gentlemen, officers, stewards, cooks, scullions, errand boys, guards, porters, pages, footmen. She touched likewise all the horses in the stables, with their grooms, the big mastiffs in the courtyard, and little Puff, the pet dog of the princess, who was lying on the bed beside his mistress. The moment she had touched them they all fell asleep, to awaken only at the same moment as their mistress. Thus they would always be ready with their service whenever she should require it. The very spits before the fire, loaded with partridges and pheasants, subsided into slumber, and the fire as well. All was done in a moment, for the fairies do not take long over their work.

Then the king and queen kissed their dear child, without waking her, and left the castle. Proclamations were issued, forbidding any approach to it, but these warnings were not needed, for within a quarter of an hour there grew up all round the park so vast a quantity of trees big and small, with interlacing brambles and thorns, that neither man nor beast could penetrate them. The tops alone of the castle towers could be seen, and these only from a distance. Thus did the fairy's magic contrive that the princess, during all the time of her slumber, should have naught whatever to fear from prying eyes.

At the end of a hundred years the throne had passed to another family from that of the sleeping princess. One day the king's son chanced to go a-hunting that way, and seeing in the distance some towers in the midst of a large and dense forest, he asked what they were. His attendants told him in reply the various stories which they had heard. Some said there was an old castle haunted by ghosts, others that all the witches of the neighborhood held their revels there. The favorite tale was that in the castle lived an ogre, who carried thither all the children whom he could catch. There he devoured them at his leisure, and since he was the only person who could force a passage through the wood nobody had been able to pursue him.

While the prince was wondering what to believe, an old peasant took up the tale.

"Your Highness," said he, "more than fifty years ago I heard my father say that in this castle lies a princess, the most beautiful that has ever been seen. It is her doom to sleep there for a hundred years, and then to be awakened by a king's son, for whose coming she waits."

This story fired the young prince. He jumped immediately to the conclusion that it was for him to see so gay an adventure through, and impelled alike by the wish for love and glory, he resolved to set about it on the spot.

Hardly had he taken a step towards the wood when the tall trees, the brambles and the thorns, separated of themselves and made a path for him. He turned in the direction of the castle, and espied it at the end of a long avenue. This avenue he entered, and was surprised to notice that the trees closed up again as soon as he had passed, so that none of his retinue were able to follow him. A young and gallant prince is always brave, however; so he continued on his way, and presently reached a large forecourt.

The sight that now met his gaze was enough to fill him with an icy fear. The silence of the place was dreadful, and death seemed all about him. The recumbent figures of men and animals had all the appearance of being lifeless, until he perceived by the pimply noses and ruddy faces of the porters, that they merely slept. It was plain, too, from their glasses, in which were still some dregs of wine, that they had fallen asleep while drinking.

The prince made his way into a great courtyard, paved with marble, and mounting the staircase entered the guardroom. Here the guards were lined up on either side in two ranks, their muskets on their shoulders, snoring their hardest. Through several apartments crowded with ladies and gentlemen in waiting, some seated, some standing, but all asleep, he pushed on, and so came at last to a chamber which was decked all over with gold. There he encountered the most beautiful sight he had ever seen. Reclining upon a bed, the curtains of which on every side were drawn back, was a princess of seemingly some fifteen or sixteen summers, whose radiant beauty had an almost unearthly luster.

Trembling in his admiration he drew near and went on his knees beside her. At the same moment, the hour of disenchantment having come, the princess awoke, and bestowed upon him a look more tender than a first glance might seem to warrant.

"Is it you, dear prince?" she said. "You have been long in coming!"

Charmed by these words, and especially by the manner in which they were said, the prince scarcely knew how to express his delight and gratification. He declared that he loved her better than he loved himself. His words were faltering, but they pleased the more for that. The less there is of eloquence, the more there is of love.

Her embarrassment was less than his, and that is not to be wondered at, since she had had time to think of what she would say to him. It seems (although the story says nothing about it) that the good fairy had beguiled her long slumber with pleasant dreams. To be brief, after four hours of talking they had not succeeded in uttering one half of the things they had to say to each other.

Now the whole palace had awakened with the princess. Everyone went about his business, and since they were not all in love they presently began to feel mortally hungry. The lady-in-waiting, who was suffering like the rest, at length lost patience, and in a loud voice called out to the princess that supper was served.

The princess was already fully dressed, and in most magnificent style. As he helped her to rise, the prince refrained from telling her that her clothes, with the straight collar which she wore, were like those to which his grandmother had been accustomed. And in truth, they in no way detracted from her beauty.

They passed into an apartment hung with mirrors, and were there served with supper by the stewards of the household, while the fiddles and oboes played some old music and played it remarkably well, considering they had not played at all for just upon a hundred years. A little later, when supper was over, the chaplain married them in the castle chapel, and in due course, attended by the courtiers in waiting, they retired to rest.

They slept but little, however. The princess, indeed, had not much need of sleep, and as soon as morning came the prince took his leave of her. He returned to the city, and told his father, who was awaiting him with some anxiety, that he had lost himself while hunting in the forest, but had obtained some black bread and cheese from a charcoal burner, in whose hovel he had passed the night.

His royal father, being of an easygoing nature, believed the tale, but his mother was not so easily hoodwinked. She noticed that he now went hunting every day, and that he always had an excuse handy when he had slept two or three nights from home. She felt certain, therefore, that he had some love affair.

Two whole years passed since the marriage of the prince and princess, and during that time they had two children. The first, a daughter, was called "Dawn," while the second, a boy, was named "Day," because he seemed even more beautiful than his sister.

Many a time the queen told her son that he ought to settle down in life. She tried in this way to make him confide in her, but he did not dare to trust her with his secret. Despite the affection which he bore her, he was afraid of his mother, for she came of a race of ogres, and the king had only married her for her wealth.

It was whispered at the court that she had ogrish instincts, and that when little children were near her she had the greatest difficulty in the world to keep herself from pouncing on them.

No wonder the prince was reluctant to say a word.

But at the end of two years the king died, and the prince found himself on the throne. He then made public announcement of his marriage, and went in state to fetch his royal consort from

her castle. With her two children beside her she made a triumphal entry into the capital of her husband's realm.

Some time afterwards the king declared war on his neighbor, the Emperor Cantalabutte. He appointed the queen mother as regent in his absence, and entrusted his wife and children to her care.

He expected to be away at the war for the whole of the summer, and as soon as he was gone the queen mother sent her daughter-in-law and the two children to a country mansion in the forest. This she did that she might be able the more easily to gratify her horrible longings. A few days later she went there and in the evening summoned the chief steward.

"For my dinner tomorrow," she told him, "I will eat little Dawn."

"Oh, Madam!" exclaimed the steward.

"That is my will," said the queen; and she spoke in the tones of an ogre who longs for raw meat.

"You will serve her with piquant sauce," she added.

The poor man, seeing plainly that it was useless to trifle with an ogress, took his big knife and went up to little Dawn's chamber. She was at that time four years old, and when she came running with a smile to greet him, flinging her arms round his neck and coaxing him to give her some sweets, he burst into tears, and let the knife fall from his hand.

Presently he went down to the yard behind the house, and slaughtered a young lamb. For this he made so delicious a sauce that his mistress declared she had never eaten anything so good.

At the same time the steward carried little Dawn to his wife, and bade the latter hide her in the quarters which they had below the yard.

Eight days later the wicked queen summoned her steward again.

"For my supper," she announced, "I will eat little Day."

The steward made no answer, being determined to trick her as he had done previously. He went in search of little Day, whom he found with a tiny foil in his hand, making brave passes -- though he was but three years old -- at a big monkey. He carried him off to his wife, who stowed him away in hiding with little Dawn. To the ogress the steward served up, in place of Day, a young kid so tender that she found it surpassingly delicious.

So far, so good. But there came an evening when this evil queen again addressed the steward.

"I have a mind," she said, "to eat the queen with the same sauce as you served with her children."

This time the poor steward despaired of being able to practice another deception. The young queen was twenty years old, without counting the hundred years she had been asleep. Her skin, though white and beautiful, had become a little tough, and what animal could he possibly find that would correspond to her? He made up his mind that if he would save his own life he must kill the queen, and went upstairs to her apartment determined to do the deed once and for all. Goading himself into a rage he drew his knife and entered the young queen's chamber, but a reluctance to give her no moment of grace made him repeat respectfully the command which he had received from the queen mother.

"Do it! do it!" she cried, baring her neck to him; "carry out the order you have been given! Then once more I shall see my children, my poor children that I loved so much!"

Nothing had been said to her when the children were stolen away, and she believed them to be dead.

The poor steward was overcome by compassion. "No, no, Madam," he declared. "You shall not die, but you shall certainly see your children again. That will be in my quarters, where I have hidden them. I shall make the queen eat a young hind in place of you, and thus trick her once more."

Without more ado he led her to his quarters, and leaving her there to embrace and weep over her children, proceeded to cook a hind with such art that the queen mother ate it for her supper with as much appetite as if it had indeed been the young queen.

The queen mother felt well satisfied with her cruel deeds, and planned to tell the king, on his return, that savage wolves had devoured his consort and his children. It was her habit, however, to prowl often about the courts and alleys of the mansion, in the hope of scenting raw meat, and one evening she heard the little boy Day crying in a basement cellar. The child was weeping because his mother had threatened to whip him for some naughtiness, and she heard at the same time the voice of Dawn begging forgiveness for her brother.

The ogress recognized the voices of the queen and her children, and was enraged to find she had been tricked. The next morning, in tones so affrighting that all trembled, she ordered a huge vat to be brought into the middle of the courtyard. This she filled with vipers and toads, with snakes and serpents of every kind, intending to cast into it the queen and her children, and the steward with his wife and serving girl. By her command these were brought forward, with their hands tied behind their backs.

There they were, and her minions were making ready to cast them into the vat, when into the courtyard rode the king! Nobody had expected him so soon, but he had traveled posthaste. Filled with amazement, he demanded to know what this horrible spectacle meant.

None dared tell him, and at that moment the ogress, enraged at what confronted her, threw herself head foremost into the vat, and was devoured on the instant by the hideous creatures she had placed in it.

The king could not but be sorry, for after all she was his mother; but it was not long before he found ample consolation in his beautiful wife and children.

### **Quackling (French Folktale)**

Once there was a very small duck with a very loud quack. So they called him Quackling.

Now, Quackling was clever and he worked hard, so he saved up a good deal of money. In fact, he saved up so much that the King himself came to borrow some.

Quackling was proud to loan his money to the King. But a year went by, then two, then three, and the King never paid him back.

"I've waited long enough," said Quackling. So he took a sack for the money, and he started for the castle, calling,

"Quack! Quack! Quack!

I want my money back!"

Before long, he came upon a ladder leaning against a wall.

"Where are you going, Quackling?" said Ladder.

"To the King for my money," said Quackling.

"To the King!" said Ladder. "How wonderful! Will you take me with you?"

"Why not?" said Quackling. "One can never have too many friends." And he called out, "Quack! Quack! Quack!

Ladder into sack!"

Quick as you can blink, Ladder was in the sack. Then Quackling walked on, calling, "Quack! Quack! Quack!

I want my money back!"

Not much later, he came upon a river flowing through a wood.

"Where are you going, Quackling?" said River.

"To the King for my money," said Quackling.

"To the King!" said River. "How splendid! Will you take me with you?"

"Why not?" said Quackling. "One can never have too many friends." And he called out, "Quack! Quack! Quack!

River into sack!"

Quick as you can wink, River was in the sack. Then Quackling walked on, calling, "Quack! Quack! Quack! Quack!"

In a little while, he came upon a beehive hanging from a tree.

"Where are you going, Quackling?" said Beehive.

"To the King for my money," said Quackling.

"To the King!" said Beehive. "How marvelous! Will you take me with you?"

Now, Quackling's sack was getting full, but he thought there might be just enough room.

"Why not?" said Quackling. "One can never have too many friends." And he called out,

"Quack! Quack! Quack! Beehive into sack!"

Quick as you can think, Beehive was in the sack. Then Quackling walked on, calling, "Quack! Quack! Quack! Quack! I want my money back!"

Soon after, Quackling arrived at the King's castle. He marched right up to the guards and told them, "I've come for my money!"

The guards went inside and told the prime minister. The prime minister told the King. "Who does that Quackling think he is?" said the King. "Never mind. Just put him in the pit!"

So they put Quackling in the pit and left him there.

"Help!" cried Quackling. "I'll never get out!"

Then he remembered Ladder. So he called out,

"Quack! Quack! Quack!

Ladder out of sack!"

Quick as you can blink, Ladder was out of the sack. Ladder leaned against the side of the pit, and Quackling climbed out. Then Quackling stood there, calling,

"Quack! Quack! Quack!

I want my money back!"

"How did that Quackling get out of the pit?" said the King. "Never mind. Just put him in the pot!"

So they put Quackling in the pot and set it on the fire.

"Help!" cried Quackling. "I'm in a stew!"

Then he remembered River. So he called out,

"Quack! Quack! Quack!

River out of sack!"

Quick as you can wink, River was out of the sack. River put out the fire and flowed away. Then Quackling got out, calling,

"Quack! Quack! Quack!

I want my money back!"

"How did that Quackling get out of the pot?" said the King. "Never mind. Just bring him here, and I'll put him in his place—for good!"

So they brought Quackling to the King. The King tried to grab him.

"Help!" cried Quackling. "This is the end!"

Then he remembered Beehive. So he called out,

"Quack! Quack! Quack!

Beehive out of sack!"

Quick as you can think, Beehive was out of the sack. The bees rushed from the hive and started to sting the King.

"Help!" cried the King. He fled from the castle, and the bees followed. They chased him all the way to— Well, no one knows where, for they never saw him again.

"Hooray!" cried the people of the castle, and the prime minister said, "We never liked that King anyway."

So they put Quackling on the throne and gave him a crown.

"Will you be our King?" said the guards.

"Why not?" said Quackling. "One can never have too many friends."

### **Anklet for a Princess:**

### A Cinderella Story from India

Once upon a time, in Eastern India, "a girl named Cinduri walked slowly down the road. Her feet dragged through the dust as she balanced a heavy pot on her head. She was on her way to fetch drinking water for the family. "When she got home with the water, her work would not be done. She still had to "milk the cows, clean the house, prepare yogurt and cheese for tomorrow's meal, and milk the cows again!" And then there was the garden to tend. Her life had not always been this hard. She sadly remembered last year when "an epidemic of cholera had swept through her village. Within a few days her mother and father had died of the disease." Worse yet, this left Cinduri alone with his father's other wife, and their daughter Lata. Neither had any love to show her. As her tears began to flow, she heard a voice and "was startled by a showering burst of water right in front of her...a great white snake rose out of the lake. Her eyes were blinded by the shine of a bright red jewel on his bobbing head. He hissed a question, "You are a beautiful young girl. Why are you so dirty and dressed in rags?" Cinduri spoke not a word against her stepmother, but told of the hard work she did. In answer to her meals, she replied that she was given a small bowl of rice and some scraps each day. "The snake was furious. "Rice and a few handouts? That is not enough to eat!" With a darting motion of his head, the serpent produced a golden plate. On it there was a beautiful display of East Indian foods. The almond rice, lentils, flatbreads, curries, and sweet milk delights gave off tantalizing aromas. Cinduri was hungry, but before taking the plate she pressed her hands together and bowed to show thanks to the snake. " This was how Cinduri grew healthy and strong. The snake became her godfather, and taught her to call for him with a chant: Godfather Snake, oh Godfather Snake, Godfather Snake of the Magic Lake, Come to my help, for your daughter's sake!" Now, her stepmother grew suspicious. Why wasn't Cinduri starving and miserable any more, and where was she getting such cool, clear water? It was time to investigate, so she sent Lata to spy on her. Sure enough, Cinduri chanted, and the snake appeared. If gave her food and filled her water jugs. Lata told her mother that the snake was a terrible, monstrous creature. On the way home, Cinduri overheard some exciting news: the Crown Prince was coming to their village to celebrate the 9 Days of the Navaratri Festival! Her stepmother sneered that in any case, Cinduri would not be attending the festival. Then, to Cinduri's horror, she took out a silver anklet that had belonged to her own mother, and placed it around Lata's ankle. Her stepmother ordered her back to work. Late that night, when she had finally finished her chores, Cinduri ran to the lake and chanted for Godfather Snake. Up he came, and when he hear her sorrows, he said, "My beautiful little goddaughter, you deserve one magical evening....See this beautiful jewel in my forehead? Take it!' he commanded. She obeyed him, even though the jewel felt hot to her touch. 'Don't drop it,' he warned. Now turn

round and round, like this.' She watched the snake twist his body in a circle, and she copied his movements. As she slowly twirled, she felt herself being wrapped in cloth of the purest gold threads. Magnificent jewels appeared in her hair...she saw two of the most beautiful anklets she had ever seen, decorated with tiny bells and covered with diamonds that sparkled in the moonlight. 'Go to the festival, but at midnight, when they light the candle, you must return home. The magic will be over " warned the snake. At the festival, the music hushed when Cinduri walked in. The Crown Prince had eyes only for her, and together, they danced all night. Suddenly, a candle was lit, and the prince told her it was time for the aarti, a ceremony. The girl "dashed away through the crowd. The prince tried to follow the sound of the bells on her feet...then he caught sight of something sparkling on the road...he realized it was one of her anklets!" The next day he informed his father of his decision to marry the girl who could wear it. "The King called forth messengers. He told them to go to every village. He proclaimed, "... The girl who can fit her foot through it will become the bride of the Crown Prince. " When they arrived stepmother was in a tizzy. She kept Cinduri busy with chores to keep her out of the way. Or so she thought! Cinduri still had the jewel from Godfather snake, and when she touched it now, "she saw miraculous changes all around her. The house was clean, the butter was churned, the weeds in the garden had disappeared, and fresh water and straw appeared in all the animals' pens." Even her dress was clean! She ran towards the pavilion for a chance to try on the anklet. When she got there, Lata was making "terrible faces, trying to twist her foot into the anklet, but it was not use." Just as the Crown Prince was about to leave, Cinduri rushed up. He saw her, and told his father, "One more!' He slipped her foot into the jeweled circle. There was a gasp from the crowd as Cinduri pulled from her pocket the matching anklet she had kept hidden away...Now, wearing both anklets, she made a slow, twirling motion as her snake Godfather had taught her. When she finished her turn, she was dressed in the...sari and jewelry she had worn on Festival Night. With a sparkle in his eyes that made Cinduri's heart beat wildly, the prince proclaimed, 'This beautiful princess must be my bride!" After the wedding, the Prince "ordered that a large pond be built in the gardens of their new palace so that Godfather Snake could come to live near them and continue to bless their lives." Now that Cinduri was not around to work the fields and tend the animals, the stepmother and Lata had to to this work. But they did such a poor job that the animals ran away and the garden died. The stepmother and her daughter became beggars. Godfather Snake blessed the couple, and told them they "would live for many thousands of happy days."

### THE BIRD WITH TWO HEADS (Indian Folktale)

Long, long ago, there lived a strange bird in a huge banyan tree. The tree stood beside a river. The strange bird had two heads, but only one stomach.

Once, while the bird was flying high in the sky, he saw an apple shaped fruit lying on the bank of the river. The bird swooped down, picked up the fruit and began to eat it. This was the most delicious fruit the bird had ever eaten.

As the bird had two heads, the other head protested, "I'm your brother head. Why don't you let me also eat this tasty fruit?"

The first head of the bird replied, "Hush Up.You know that we've only one stomach. Whichever head eats, the fruit will go to the same stomach. So it doesn't matter as to which head eats it. Moreover, I'm the one who found this fruit. So I've the first right to eat it."

Hearing this, the other head became silent. But this kind of selfishness on the part of the first head pinched him very much. One day, while flying, the other head spotted a tree bearing poisonous fruits. The other head immediately descended upon the tree and plucked a fruit from it.

"Please don't eat this poisonous fruit," cried the first head. "If you eat it, both of us will die, because we've a common stomach to digest it."

"Hush Up!" shouted the other head. "Since I've plucked this fruit, I've every right to eat it."

The first head began to weep, but the other head didn't care. He wanted to take revenge. He ate the poisonous fruit. As a result both of them died.

Moral: (People living in a family should never quarrel among themselves)

### How The Moon Was Created (Indian Folktale)

A very long time ago, when the world was just created, the moon was not there and the sun shone all the time. There was no concept of night as the sun never set. It was bright and sunny and there was daylight all the time. People worked hard continuously and did not realize when to rest.

One fine day, the creator of the world visited the men in the fields while they were working.

He asked one of the men, "When did you last water this field?"

"Today," replied the sweating farmer.

"And when did you dig the hole?"

"Today," replied another man.

"When did you plant those trees in the garden?"

"Today, of course. It is day all the time so everything was done today."

The creator then saw a woman with a small child and asked her, "When was your son born?"

"Today," replied the woman.

The creator then understood that the people of the world had no understanding of time; they would work all the time as they couldn't understand the division of day and night. He thought that he should do something about it. He then told the sun, "You must shine all day

and set in the evening, and rise once again the next morning. People will then realise the difference between day and night. They will stop working when it becomes dark and will get some rest." The sun readily agreed.

When it became evening, the sun went down quietly. Suddenly, everything became dark. Everyone got scared with the abrupt darkness. They panicked and ran here and there, some stumbled upon each other and some hurt themselves by falling into ditches. People were not used to this and so they did not realise what to do about it.

Finally, the leaders and the elderly realised that nothing could be done in the darkness, so they told everyone, "Please lie down and take some rest, and you shall work again when it becomes bright." When the sun came up the next morning, everyone woke up and started working. Thus, from then on, night became the time for resting.

People started living more happily and comfortably, as they were well rested. But one problem still persisted. It became completely dark after sunset, so the people could not see anything at

all. They would often bang against a tree, and hurt themselves by hitting against rocks and falling into ditches. They also broke things as they couldn't see where they were kept.

After some days the creator visited them once again and asked them, "Are you happy now?"

"Yes, we are. We sleep all night and wake up fresh to work the next morning," replied a man. "But there is still one problem—we cannot see anything in the dark. We tend to hurt each other and break a lot of things. Can we at least have the sun for some time?" asked the man.

The creator thought for some time, and replied, "No, you can't. But don't worry. I shall give you something else, something more soothing and less bright than the sun. You can see things and still sleep peacefully in its presence."

Then he created the moon. People were extremely happy, as they could see at night and did not hurt themselves any more. They slept peacefully in the light of the moon and woke up the next day when the sun shone brightly.

Thus, the moon was created.

Acrostic Poems

Grades: 4 - 8

Definition: A poem in which the first letters in each line form a name.

Materials: paper, construction paper or large index card, colored pencils

- 1. **Draft** Write the name of your country down the left-hand side of paper (one letter on each line).
- 2. Using what you have learned, write several sentences about the country with each letter of the name forming the first letter of the lines.
- 3. Edit Check your spelling and rewrite if necessary.
- 4. Final copy Write or type your acrostic poem on paper or an index card.
- 5. Decorate the paper.
- 6. Sample acrostic poem using "FRANCE

rom Kings and Queens to a

Republic, you have endured. You have given the world many great



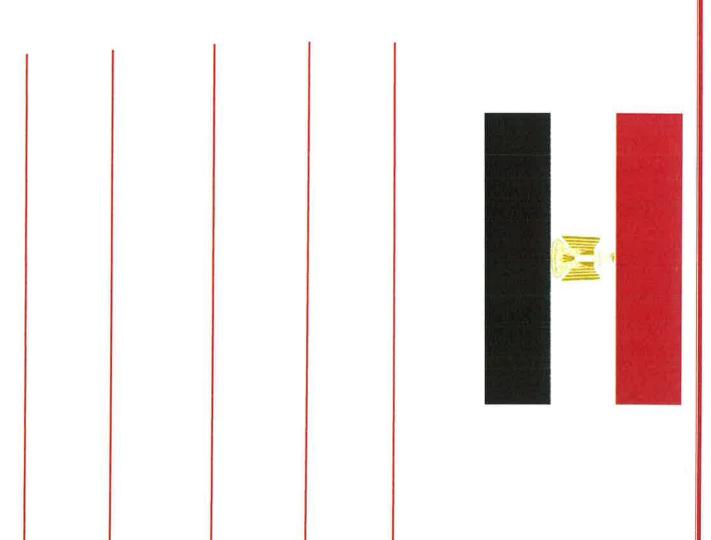
ame a few. But, it is your desserts that I celebrate the most!

ustard, cream puffs, clafouti, and chocolate

Clairs are my heart's delight.









### MY GEO POEM 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>

Ву	
(Country name)	
You can see the	and
Rive	ers.
The major city of	<del>-</del>
The neighboring countries of	and
andandand	and
and	<u>.</u>
The blue waters of the	Gulf.
The children play	<u>.</u>
(Country name)	).

### GEO POEM

Students follow this pattern for the non-rhyming poem:

### Line:

- 1. the name of the country
- 2. three to four physical features
- 3. one to three cultural features; for example, landmarks, museums main cities
- 4. bordering countries or bodies of water
- 5. a short description about the climate
- 6. three historical events that shaped the country
- 7. issues or problems of importance; for example, poverty, poor land, war, pollution, health care, education
- 8. the name of the country

### SAMPLE

Country name
Features the ....
Includes...
Is bordered by...
And has...
Whose people remember...
And worry about ...
Country name

Your name

- 1. Write a 1<sup>st</sup> copy, make any corrections and write a perfect copy.
- 2. Illustrate your poem, make a border, decorate it with patterns that represent the country
- 3. Put your name in the lower right hand corner

### Day In The Life Lesson Plan

Age: 3-8th grade

Time: 30 to 45 minutes

### Compare and contrast the day in the life of a student from another country.

- 1. Read through the information with students.
- 2. Discuss with group what stood out to them.
- 3. Have students create their personal day in the life story (school day) from morning to night. What do they do, and when do they do it.
- 4. Review the Venn diagram exercise with students
  - A Venn diagram is a classic way of getting students to compare and contrast the similarities and differences between key events, concepts or people.
  - Characteristics shared in common go in the central area; characteristics possessed by just one go in the outer area of that circle where it does not overlap.
- 5. Pass out the Venn diagram to students
- 6. Label one side with student's name and on the other is the foreign student name.
- 7. Using the Venn diagram students will complete the paper comparing their similarity and differences to the foreign student.
- 8. Have students volunteer to share their experience.

### Day in the Life: Egypt

What's it like to grow up in Egypt? Here's how one boy spends a typical day:

**Amr Adel Ezzeldin** is 12 and in the seventh grade. He lives in Cairo with his 18-year-old sister Rowida, his 20-year-old sister, Dina and his parents. Here's how he spends a typical day:

### 7 A.M.

My mother wakes me up. I get dressed and eat breakfast. For breakfast, I have a sandwich with white cheese or a boiled egg on either pita bread or a roll with milk or juice.

### 7:30 A.M.

The school bus picks me up in front of my house. I am a student at Elnasr School. This is my first year in the division for boys in grades seven through 12.

### 7:45 A.M.

I arrive at school. I usually play basketball or soccer with my friends until the bell rings.

### 8:15 A.M.

The school day begins. We line up for 10 minutes inside the school and do lots of stretching and touching our toes.

### 8:25 A.M.

Classes start. We have nine periods a day and each period lasts 45 minutes. Seventh grade is hard work and some of the teachers are pretty strict! We study Arabic, English, German, math, science and social studies. We also study art, music and computers, my favorite class. About once a week, we get to spend time at the school's computer lab. I usually play games the whole time!

### 12:00 P.M.

Recess and lunch.

### 12:30 P.M.

Back to class. Since the school year is almost over, my teachers are reviewing for final exams.

### 2:45 P.M.

The school day ends. I go to my bus. Some kids have their parents pick them up.

### 3:45 P.M.

I get home. It takes longer to get home because my house is one of the last stops on the bus route

### 4.00 P M

I take a shower and eat lunch. I usually have baked macaroni with red sauce or fried chicken with rice and salad. After lunch, I relax and watch television. We get lots of American shows on our satellite dish. My favorite shows are Buffy the Vampire Slayer, Relic Hunter, Dark Angel and The Simpsons.

### 5:15 P.M.

I start my homework, which takes an hour or more. Then I study hard for final exams, which are less than a week away. During the school year, I have more time to play and spend time with my friends. During the year, I play field hockey on a team at a sporting club near my home called EI Shams (that's Arabic for "The Sun").

### 8:00 P.M.

Dinnertime. I have two favorite foods:, pizza and molokhia (mo-lo-khie-ah), a popular Egyptian soup made of greens. I like to eat it with rice.

### 9:00 P.M.

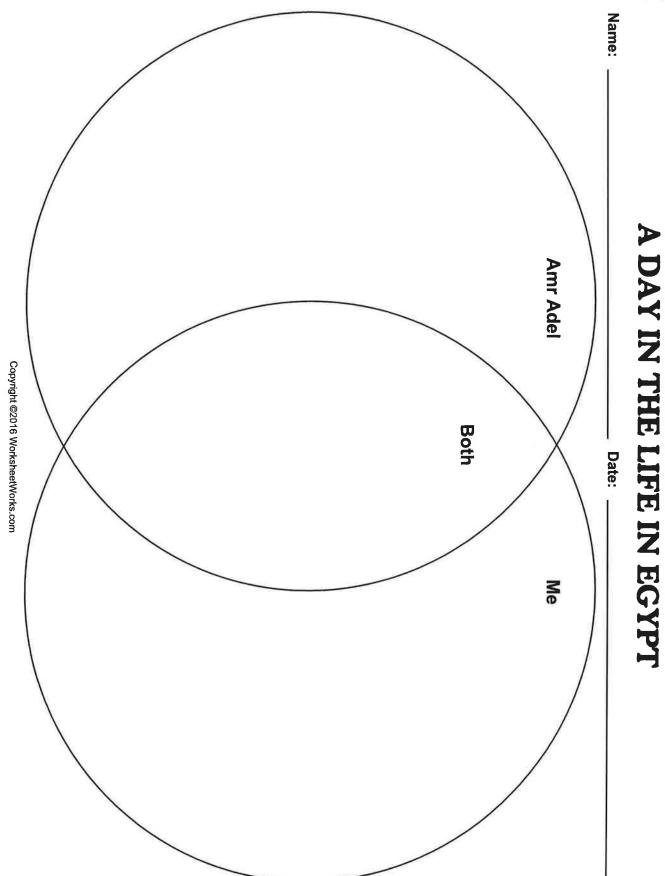
I watch more television or play a computer game. I play games on my computer or Play Station 2. My favorite games are Dark Angel and Superman. I also email my friends.

### 10:30 or 11 P.M.

Bedtime.



Amr Adel Ezzeldin



### **Postcard Assignment**



Create a postcard to send to a friend, teacher or someone working at your school.

- 1. Design the blank side of the 'postcard' to show something about the culture and country you are studying. Fill up the whole card. Add color. Neatness counts!
- 2. On the lined side write home telling about the culture in general. What do you do every day? What food do you eat? What do you wear, and where do you live? The information should contain specific facts about your culture. Be sure to fill up the whole side of the card. Do not write big. Check your writing mistakes.
- 3. "Mail" your postcard to the person you are writing at your school

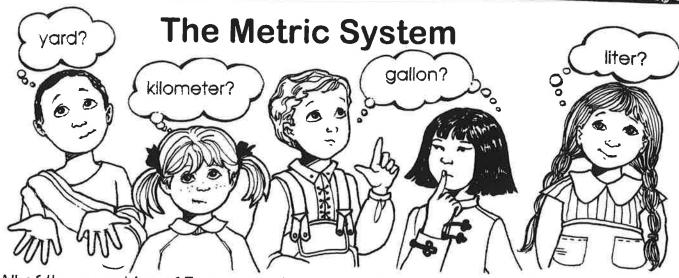
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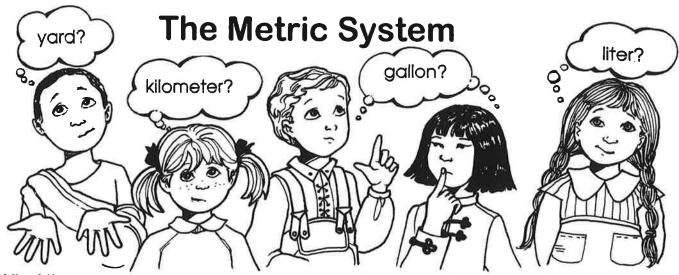
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Design a stamp in upper right corner	
Design a st	
Cut postcards apart	



All of the countries of Europe and nearly all the rest of the world use the metric system as their unit of measurement. This can be very confusing for Americans visiting Europe and for Europeans visiting America! Use a calculator and the clues below to help figure out metric equivalents.

1	. <b>Area</b> of a wildlife refuge enter: 5 square miles x 2.59 =	square kilometers
2	Capacity of a gallon of milk	square kiloritetets
	enter: 1 gallon x 3.79 =	liters
3	Height of a man	
	enter: 6 feet x 30.48 =	centimeters
4.	Length of a football field	
	enter: 100 yards x .91 =	meters
5.	Distance to the sun	
	enter: 92,900,000 x 1.6 =	kilometers
6.	Weight of bag of sugar	
	enter: $5 \text{ pounds } x .45 = $	kilograms
7.	Weight of a loaded truck	
	enter: 7 tons x .91 =	metric tons
8,	Temperature of snow	
	enter: (32° F - 32) x .56 =	° Celsius
9,	Temperature of your body	
	enter: (98° F - 32) x .56 =	° Celsius
10.	Temperature of boiling water	
	enter: (212° F - 32) x .56 =	° Celsius



All of the countries of Europe and nearly all the rest of the world use the metric system as their unit of measurement. This can be very confusing for Americans visiting Europe and for Europeans visiting America! Use a calculator and the clues below to help figure out metric equivalents.

1.	<b>Area</b> of a wildlife refuge	¥
	enter: 5 square miles x 2.59 =	 square kilometers
2.	Capacity of a gallon of milk	

enter: 1 gallon x 3.79 =\_\_\_\_\_\_ liters

3. **Height** of a man

enter:  $6 \text{ feet } \times 30.48 = \underline{\hspace{1cm}}$  centimeters

4. **Length** of a football field enter: 100 yards x 91 = meter

enter: 100 yards x .91 = \_\_\_\_ meters

5. **Distance** to the sun

enter:  $92,900,000 \times 1.6 =$ \_\_\_\_\_ kilometers

6. **Weight** of bag of sugar enter: 5 pounds x .45 = \_\_\_\_\_ kilograms

7. **Weight** of a loaded truck enter: 7 tons x .91 = \_\_\_\_ metric tons

8. **Temperature** of snow enter: (32° F - 32) x .56 =\_\_\_\_\_ ° Celsius

9. **Temperature** of your body enter:  $(98^{\circ} \text{ F} - 32) \times .56 =$ \_\_\_\_\_\_^{\circ} Celsius

enter: (212° F - 32) x .56 =\_\_\_\_° Celsius

### **Answer Key**

- 1. 12.95 square cm.
- 2. 3.79 liters
- 3. 182.88 cm.
- 4. 91 meters
- 5. 148,640,000 km.
- 6. 2.25 kilograms
- 7. 6.37 metric tons
- 8.0°C
- 9. 36.96°C
- 10, 100,8°C

## The Metric System

### Length

1 centimeter (cm) = 10 millimeters (mm) 1 inch = 2.54 centimeters (cm) 1 foot = 0.3048 meters (m) 1 foot = 12 inches 1 yard = 3 feet

1 meter (m) = 100 centimeters (cm) 1 meter (m)  $\approx$  3.280839895 feet

1 furlong = 660 feet

1 kilometer (km) = 1000 meters (m) 1 kilometer (km)  $\cong$  0.62137119 miles

1 mile = 5280 ft

1 mile = 1.609344 kilometers (km) 1 nautical mile = 1.852 kilometers (km)

### Area

1 square foot = 144 square inches

1 square foot = 929.0304 square centimeters

1 square yard = 9 square feet

1 square meter ≅ 10.7639104 square feet
1 acre = 43,560 square feet
1 hectare = 10,000 square meters
1 hectare ≅ 2.4710538 acres
1 square kilometer = 100 hectares

1 square mile ≅ 2.58998811 square kilometers

1 square mile = 640 acres

### **Speed**

1 mile per hour (mph)  $\cong$  1.46666667 feet per second (fps) 1 mile per hour (mph) = 1.609344 kilometers per hour 1 knot  $\cong$  1.150779448 miles per hour 1 foot per second  $\cong$  0.68181818 miles per hour (mph) 1 kilometer per hour  $\cong$  0.62137119 miles per hour (mph)

### Volume

1 US tablespoon = 3 US teaspoons 1 US fluid ounce ≅ 29.57353 milliliters (ml) 1 US cup = 16 US tablespoons 1 US cup = 8 US fluid ounces 1 US pint = 2 US cups

1 US pint = 16 US fluid ounces

1 liter (I) ≅ 33.8140227 US fluid ounces

1 liter (I) = 1000 milliliters (ml)

1 US quart = 2 US pints 1 US gallon = 4 US quarts 1 US gallon = 3.78541178 liters

### Weight

1 milligram (mg) = 0.001 grams (g) 1 gram (g) = 0.001 kilograms (kg) 1 gram (g) ≅ 0.035273962 ounces 1 ounce = 28.34952312 grams (g)

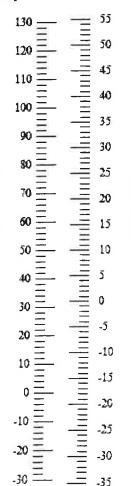
1 ounce = 0.0625 pounds 1 pound (lb) = 16 ounces

1 pound (lb) = 0.45359237 kilograms (kg)

1 kilogram (kg) = 1000 grams 1 kilogram (kg) ≅ 35.273962 ounces 1 kilogram (kg) ≅ 2.20462262 pounds (lb)

1 stone = 14 pounds 1 short ton = 2000 pounds 1 metric ton = 1000 kilograms (kg)

### **Temperature**



Fahrenheit

Celsius

# **Roman Numerals**

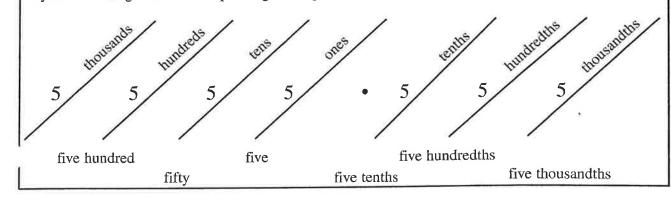
The number system developed by the Ancient Romans is still used today for many things. Our Arabic number system differs in many ways from the Roman system. Study the information below; then use this page to complete the activities.

### **Arabic Number System**

Uses ten symbols:

0 1 2 3 4 5 6 7 8 9

This system is also called the decimal system. We use a decimal point and place value to indicate what a symbol means. The value of a symbol depends on its place in a number. For example, the symbol 5 changes its value depending on its place value, or relation to the decimal point.



### **Roman Numeral System**

Uses seven symbols:

I V X L C D M I = 1 V = 5 X = 10 L = 50 C = 100 D = 500 M = 1000

The Roman numeral system uses these seven symbols and adds or subtracts their values to indicate the number.

I = 1 II = 1+1=2III = 1+1+1=3IV = 5-1 (because the I comes before the V) = 4 V = 5 VI = 5+1=6VII = 5+1+1=7VIII = 5+1+1=8IX=10-1 (because the I comes before the X) = 9 X = 10 XI = 10+1=11XII = 10+1=12XIII = 10+1+1=12XIII = 10+1+1=13XIV = 10+(5-1)=14

XVII = 10+5+1+1 = 17 XVIII = 10+5+1+1+1 = 18 XIX = (10-1)+10 = 19 XX = 10+10 = 20 XXI = 10+10+1 = 21 XXII = 10+10+1+1 = 22 XXIII = 10+10+1+1+1 = 23 XXIV = 10+10+(5-1) = 24 XXV = 10+10+5 = 25 XXVII = 10+10+5+1 = 26 XXVII = 10+10+5+1+1 = 27 XXVIII = 10+10+5+1+1 = 28 XXIX = 10+10+(10-1) = 29XXX = 10+10+10 = 30

XVI = 10+5+1 = 16

XV = 10+5 = 15

# Roman Numerals (cont.)

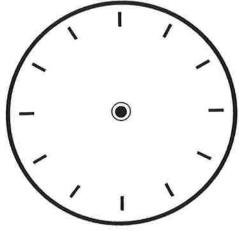
Complete the activities using the information on page 148.

Activity 1: Write the missing Roman numerals.

31 = XXXI	45 =	59 =	73 =	87 =
32 =	46 =	60 = LX	74 = LXXIV	88 =
33 = XXXIII	47 =	61 =	75 =	89 =
34 =	48 = XLVIII	62 =	76 = LXXVI	90 = XC
35 = XXXV	49 = IL	63 =	77 =	91 =
36 =	50 = L	64 =	78 =	92 =
37 =	51 =	65 = LXV	79 =	93 =
38 =	52 =	66 =	80 =	94 =
	53 =	67 =	81 =	95 = XCV
39 = IXL		68 =	82 = LXXXII	96 =
40 = XL	54 =	69 =	83 =	97 =
41 = XLI	55 = LV		84 =	98 =
42 =	56 =	70 = LXX	85 =	99 =
43 =	57 =	71 =		100 = C
44 = XLIV	58 =	72 =	86 =	100 = C

Activity 2: Write your date of birth and telephone number in Arabic numbers and then in Roman numerals. Which system uses the most symbols?

Activity 3: Write the numbers for the hours on this clock face in Roman numerals. Do you have any clocks at home like this?



Activity 4: Write the Arabic number equivalent to these Roman numerals.

1. 
$$CXLV =$$

4. 
$$DLX =$$

Activity 5: Write the Roman numeral equivalent to these Arabic numbers.

$$5. 5,247 =$$

$$2.483 =$$

$$4. 1,075 =$$

$$6. 2,603 =$$

### **Roman Numerals Practice**

You can have students copy down the list of numbers on binder paper, or you can work on the answers together on a white board. Put students into groups and have them compete to see who can figure out the answers first.

1	VII	=
Д.	V 11	_

1. 
$$VII = 7$$

1. XLVIII=

$$3. XI = 11$$

Students create models of currency and use those models to calculate total sums

Students apply their understanding of currency denominations and design elements as they create their own bills using a motif with international appeal.

Students create symbols to represent people, places, and things from a representative society (real or imaginative).

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### We fall Didney in hybridge .

Motif: main theme

### Visual Arts Standard #4

Understanding the visual arts in relation to history and cultural

### Mathematics Standards

Number and Operations

Grades K-4

Compute fluently and make reasonable estimates

Reasoning and Proof

Grades 5-6

Make and investigate mathematical conjectures

### Social Studies Standard #7

Production, distribution, and consumption-experiences that provide for the study of how people organize for the production, distribution, and consumption of goods and services

### Background information

In January 2002 the world began using a unified currency adopted by 11 European nations. Europeans said goodbye to currencies such as the French franc, the German Deutsche mark, and the Spanish peso-and said hello to the Euro! Who could have imagined that nations at war with one another only a little more than 50 years ago could agree on a shared currency? Imagine how hard it was for the 11 countries to agree on the currency's name and pictures to use on the money The process took 6 years! Finally, they decided to use generic images of architectural forms important throughout history Computers were used to create the finished bill designs. While the Euro bills look the same throughout the participating nations, the coins look the same on the "tails" side only. Each participating nation has added a "heads" side relevant to that nation only

Currency has a long and varied history. Barley was used as a form of currency in ancient Mesopotamia around 4000 BCE Silver rings became a prevalent currency form around 3000 BCE. These measurable commodities simplified trading, which had become unwieldy as greater travel multiplied the number of items available through the old barrer system. In the seventh and such ceaturies BCE. Greeks and Romans made the first cours of electrum, an alloy of gold and silver. Europeans hope that the Euro will standardize and improve trade just as parley and silver measures did in ancient times

### Resources

4 Walk in the Money (DK Eyervichess Books, by Joe Crico East-to-read history of ancient ames and modern examples includes a umetane of banking and a glossary with pictures Excellent resource for students and reachers

Money. Money, Money The Meaning of the Art and Symbols on United States Paper Currency by Mancy Winslow Parker Fascinating look at symbols portrayed on U.S. currency Written for grades 3 to 5. Students look at money in a whole new way

Monopoly® The Story Behind the World's Best-Selling Game by Rod Kennedy

How the Monopoly game was created using Atlantic City as its model. Starts students thinking about creating a game based on their own experiences

The Art of Money: The History and Design of Paper Currency From Around the World by David Standish

Beautifully illustrated reference book. Also shows what impressions countries want the world to see from their currencies

The Kid's Guide to Collecting Statebood Quarters and Other Cool Coins! by Kevin Flynn

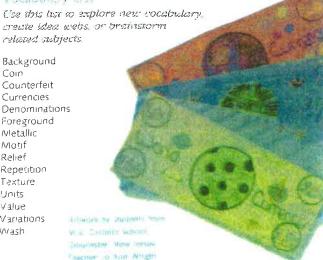
### Vocabulary USI

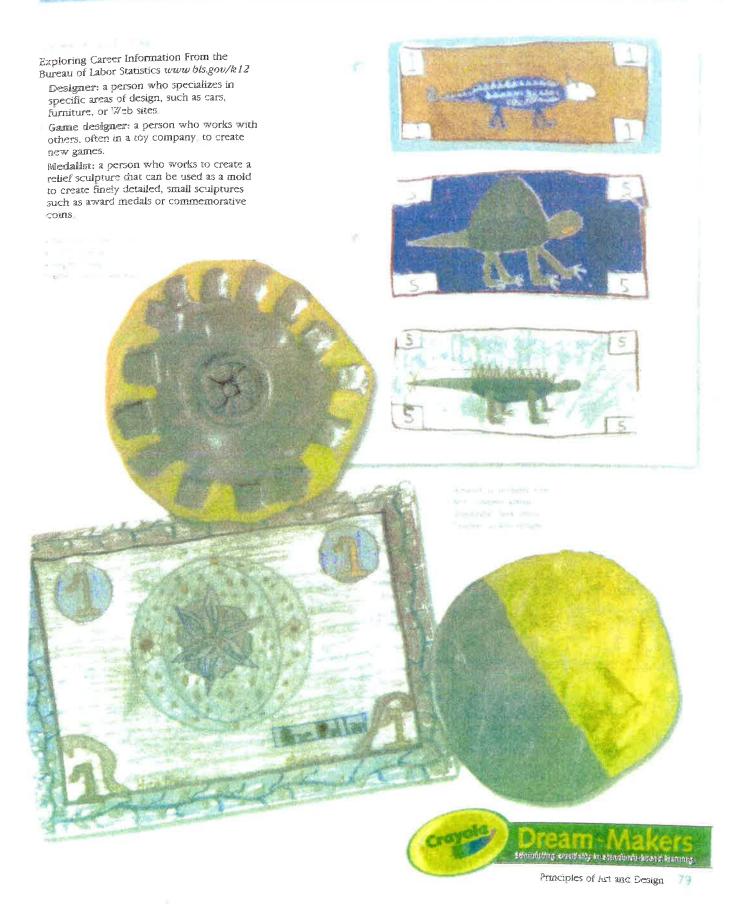
related subjects. Background Coin Counterfeit Currencies Denominations Foreground Metallic Motif Relief Repetition Texture Units Value

Variations

Wash

Activities by Durgerits Tester WILE CHIMIT HARDON. Judy Ostar New Yorkin Fascher to Amit Mright





### Designing Dollars and Making Money With Value<sub>6-75</sub>

### 1មជុំផ្លូកទាម ! ១ (epa ) (f) ; 17 (f) ប្រទេសពី [

Discuss with children: How many of you receive an allowance? Must you do chores to earn it? Do different chores have different dollar values? What would allowance money be called if you lived in Mexico? In other countries? Brainstorm and list European countries. What are the names of their currencies? Look at bills and coins from various countries. What are some of the design similarities? How are they different? What themes are frequently seen? What different denominations, or units of value, do the bills and coins represent?

Display 50 state quarters and new nickels. Discuss current coin designs Display examples or pictures of currencies from various countries. Encarta, encyclopedias, and internet sites are excellent references.

Students will design a new currency for international use. Ask them to decide on a motif—an image other nations might find acceptable, such as planets, plants, or animals. Use the motif and variations to design currency bills in several denominations. Incorporate design elements of real money, such as a central image, borders, colored backgrounds, and denomination numbers in corners. Decide on appropriate denominations.

Students will design a new series of coins on paper and select one to create a model mock up. Think about the shape and color of the coin. Of what will it be made? What will it represent? What name will it have?

Models will be much larger than the actual coin so designers can see the details of the front and back (about the size of a saucer or larger). What will the actual size be? Could it fit in a pocket without getting lost? Students will also design a wallet to hold their currency In small groups, students will design a board game that uses the new currency and properties designed around a real or imaginary place. Students will create a new board, currency, pieces, and rules.

Divide into groups. Choose the place and theme for game. Brainstorm job assignments (such as designers for money, property, and tokens). Divide tasks or work together on each task.

### Crayou

- Crayons Glue F
- Paint Brushes
- Tempera Paint (metallic. optional)
- Watercolors

- Model Magic<sup>a</sup>
- Tempera Mixing Mediums (optional)
- Colored Pencils Markers
- Watercolors

### Other Marecals

- Modeling tools such as plastic dinner knives, craft sticks, and toothpicks
- Dak tag or corrugated cardboard
- Tentured surfaces

Oak cag

- Patters Sponges
- Drawing paper 9 x 12 inches 2 aper towels
- Recycled newspaper
- Water containers

### Set up To:

- Cover painting surface with newspaper
- To dry paper quickly, press it between pages of a recycled phone book
- Air Dry Clay can be used for grades 5 to 6 to make game tokens. Drying time is 3 days
- If game tokens will be used consider glazing them with a morture of equal parts of glue and water regrain the glaze before handling

### Process Session 1 20 30 min

### Design coins

- Sketch (deas for coin denomination) Include ( 5, 10 and 25 cents
- Select a coin to enlarge front and decail to that skerch

### Pant currency papers

- Decree on oxexpround colors to complement numericy month
- Wet one side of drawing paper with a order or sponge. Brish watercolor on it. Repeat with different constrail at other paper kindry the paint.
- Fig the first papers over and paint the backs to match the other values on the fronts. Air-first the paint.

- Knead and roll a Model Magic\* baseball. Flatten it on the cardboard where it will be displayed. Make a disk about 1/2" thick
- Impress textured objects into the compound to add designs and motif for the front of the coin. Press on additional compound to build up surface.
- Repeat steps 3 and 4 to make a replica of the coin back Air-dry disks for 24 hours.
- Use rulers to divide watercolor paper into three equal 4- x 9-inch portions Cut
- Fold the 9" side of another paper over itself to make a 4 1/2- x 12-inch pocket. Glue one of the short ends together
- Add designs planned for the currency to the wallet.
- Decide how many properties the game will have
  - Use a ruler to sketch out the game board on oak tag.
  - Name the game and write it on the board. Add details to each property Keep in mind the currency motif.

- Paint coins. Add Mixing Mediums if desired. Air-dry
- Cut currency into bills. Add design elements of real money to currency

- Glue coin disks together.
- Create game pieces using modeling compounds. Paint if desired Air-dry 24 hours.

- Trible's Alline
- Write down game rules
- Prepare a short group presentation about the process of creating this new game

- Discuss coin designs and symbols with each student. How unique are coins? What processes were used to sculpt them? What do symbols mean?
- Talk about currency and what symbols represent on each bill Students identify attributes of countries represented.
- Are wallets constructed according to directions?
- How well did the group work together?
- Does the game include all necessary components? Are game directions clearly written?
- Was presentation informative?
- Ask students to reflect on this lesson and write a DREAM statement to summarize the most important things they learned
- Display student art with objectives and standards

Create a series of coans for countries being studied and/or that are represented in the community

Use coins so creare a simple burter system game

Count and trade coins

Create profiles of each country and its new currency Include a map population physical characteristics climate economic resources, and other information

Write mock travel brochures to attract visitors to the country

Create a box for the game What would go on the outside of the box to give consumers clues about what sinside?

Play games Modify cutes as necessary to make it more enjoyable

Create an original game using money Wate new rules





### **Activity: Currency Conversion**

Grade: 5<sup>th</sup> - 8<sup>th</sup> Grade

Time: 30 minutes

In this activity, you will learn how to convert money between different currencies using an exchange rate table and a calculator.

### You will need

- a calculator
- A current list of exchange rates (look up on the internet)

Vacation! The Brown family are going to visit many different countries on their vacation.

From their home in California they will travel to Egypt, France, Ethiopia and India. Mr. Brown uses his credit card to change money from USD (\$US) to the local currency in each of the locations they visit.

Because currencies change all the time, the amount of money Mr. Brown receives in each local currency will change from day to day. But the following table (old data) will give you an idea of how currencies are converted:

Currency	Code	USD/1 unit	Units/ 1 USD
Egyptian Pound	EGP	0.112649	8.87713
France (EURO)	EUR	1.08744	.9196
Ethiopian Burr	ETB	.045	22.2388
Indian Rupee	INR	.015	66.8901

You will notice that there are two sets of figures for each country – the USD/ 1 unit and the Units/ 1 USD. This is because you get one rate for changing from \$US to the foreign currency and a different rate for changing back from the foreign currency to the \$US. This is how the banks make their money.

So which figure should you use?

The USD/ 1 unit figure tells us how to convert one unit of the foreign currency to the US currency. The Units/ 1 USD figure tells us how to convert one unit of the US currency to the foreign currency.

### Your Turn

Find today's current exchange rates! Use the internet to find them and fill them in:

Currency	Code	USD/1 unit	Units/ 1 USD
Egyptian Pound	EGP		
France (EURO)	EUR		
Ethiopian Burr	ETB		
Indian Rupee	INR		

### Let's look at an example

Mr. Brown converts USD100 to Ethiopian Burr (ETB). How much does he receive?

We are converting to Ethiopian Burr, so we use the first row of the table We are converting from the US currency to the Ethiopian currency, so we should use the Units/ 1 USD column:

So he receives USD100  $\times$  22.2388 = 2,223.88 ETB

Currency	Code	USD/1 unit	Units/ 1 USD
Egyptian Pound	EGP	0.112649	8.87713
France (EURO)	EUR	1.08744	.9196
Ethiopian Burr	ETB	.045	22.2388
Indian Rupee	INR	.015	66.8901

### Your Turn

How much will Mr. Brown receive if he changes:

- USD200 to Indian Rupee?
- USD400 to Euro?

### Another example

When the Brown family arrives back in the US from India, Mr. Brown finds that he has Indian Rupee 10000 left over and wants to change it back into USD. How much does he receive?

We are converting from Indian Rupee, so we use the second row of the table We are converting from the Indian Rupee currency to the US currency, so we should use the USD/ 1 unit column:

So he receives  $10000 \times .015 = USD 150$ 

Currency	Code	USD/1 unit	Units/ 1 USD
Egyptian Pound	EGP	0.112649	8.87713
France (EURO)	EUR	1.08744	.9196
Ethiopian Burr	ETB	.045	22.2388
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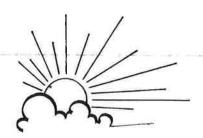
### Your Turn

How much will Mr. Brown receive if he changes:

- EUR 150 convert to USD
- EGP 10000 convert to USD

### **How Tall Is That Tree?**

Leonardo liked to test his perceptions by guessing distances and heights. When he was walking he would pick an object in the distance and estimate the number of paces it would take to walk to it. He tried to guess the heights of buildings and trees. It was good practice for painting and mapmaking. But how could he tell if he was right? Pick a tree, guess its height, and use this technique to measure it.



### MATERIALS

# Stick, at least 8 inches long Measuring tape

On a sunny day, push a stick into the ground so that 6 inches of it shows. Measure the length of the stick's shadow. Measure the length of the shadow cast by the tree you picked. Then use a simple equation to calculate the height of the tree.

In this example, the shadow of the stick is 10 inches long and the shadow of the tree is 360 inches long. You would calculate the tree's height in this way:

Multiply the height of the stick (6 inches) by the length of the tree's shadow (360 inches). This equals 2,160 inches. Divide that by the length of the stick's shadow (10 inches). That number, 216, is the height of your tree in inches. (216 inches = 18 feet)

Written as an equation, it looks like this:

Height of tree =  $\frac{\text{Height of stick } \times \text{ Length of the tree's shadow}}{\text{Length of stick's shadow}}$ 

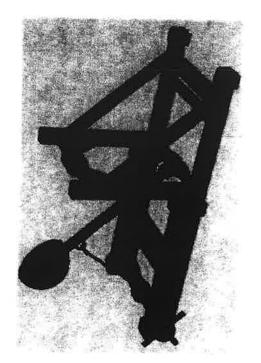
In our example:

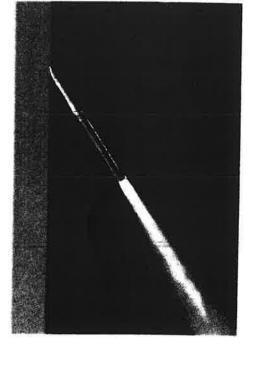
Height of tree =  $\frac{6 \text{ inches } \times 360 \text{ inches}}{10 \text{ inches}}$ = 216 inches (or 18 feet)





# Missiles and Math





Imagine you are a Milanese soldier in charge of the giant catapult. You and your men are about to engage in battle with the French army. The French are quickly approaching the walls of the city. It's important to hit your target with the first shot. How do you know where to place the catapult and how to aim it to be sure you hit the enemy? How do you know how far the missile will travel?

The catapult can hurl a missile (a 40-pound boulder!) at a speed of 60 miles per hour. Leonardo has designed the catapult so you can vary the direction of travel (the launch angle) the missile takes. When the launch angle is high, the missile tends to go up fairly high but it doesn't travel very far. If you lower the angle, the missile travels farther.

The French get closer! Start calculating!

# distance = speed x speed x flight factor

You know the speed of the missile (60 miles per hour) and you are setting the launch angle on the catapult. All you need is the flight factor, which will vary with each launch angle.

5 degrees 0.0672	0 degrees 0.0582	
0.023 4.	0.0582 60	
10 degrees	30 degrees	
	0.023 45 degrees	0.023 45 degrees 0.0582 60 degrees

We can see the banners of the French army! Their armor glints in the sunlight! The pounding of the horses' hooves reaches our ears!

Quick—look up the flight factor in the table. Use that number and the speed in the formula. How far will the missile travel if we set the launch angle for 30 degrees?

# distance = $60 \times 60 \times 0.0582$ or distance = 209.52 feet



This missile will fall short of the enemy, now 250 feet away.
Try the other flight angles to see if any of them will hit your